

**WORKMAN NYDEGGER**  
A PROFESSIONAL CORPORATION  
ATTORNEYS AT LAW  
1000 EAGLE GATE TOWER  
60 EAST SOUTH TEMPLE  
SALT LAKE CITY, UTAH 84111  
TELEPHONE (801) 533-9800  
FAX (801) 328-1707

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Comments: Serial No. 09/646,767

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Docket No.: 15268.1

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OCT 21 2005

PATENT APPLICATION  
Docket No: 15268.1

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Gast et al.	)
Serial No.	09/646,767	) Art Unit
Confirmation No.	7760	) 3641
Filed:	November 30, 2000	)
For:	PROPELLANTS FOR GAS GENERATOR	)
Examiner:	Aileen Baker Felton	)
Customer No.:	022913	)

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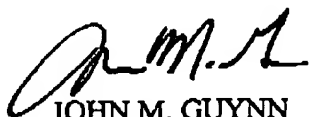
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- Transmittal Letter (1 page)
- Reply Brief

Dated this 21<sup>st</sup> day of October 2005.

Respectfully submitted,



JOHN M. GUYNN  
Attorney for Applicant  
Registration No. 36,153  
WORKMAN NYDEGGER  
(801) 533-9800

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## PATENT APPLICATION

**Docket No. 15268-1**  
1000 EAGLE GATE TOWER  
60 EAST SOUTH TEMPLE  
SALT LAKE CITY, UTAH 84111  
TELEPHONE: (801) 533-9800  
FAX: (801) 328-1707  
WEBSITE: [HTTP://WWW.ONLAW.COM](http://www.onlaw.com)

RICK D. NYDEGGER  
BRENT P. LORIMER  
THOMAS R. VUKOTICH  
LARRY R. LAYCOCK  
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**In re application of**

Gast et al.

Serial No. 09/646,767

Confirmation No. 7760

Filed: November 30, 2000

For: **PROPELLANTS FOR GAS GENERATOR**

**Examiner:** Aileen Baker Felton

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## TRANSMITTAL FOR REPLY BRIEF

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**Sir:**

**Transmitted herewith are the following for entry in the above-identified application:**

- Transmittal
- Reply Brief

Dated this 25<sup>th</sup> day of October 2005

Respectfully submitted,

  
JOHN M. GUYANN  
Registration No. 36,153  
Attorney for Applicant  
Customer No. 022913  
(801) 533-9800

VERNON R. RICE &  
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**PATENT APPLICATION**  
Docket No. 15268.1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND  
INTERFERENCES

**In re application of**

Gast et al.

Serial No 09/646,767

Confirmation No. 7760

Filed November 30, 2000

For PROPELLANTS FOR GAS GENERATOR

**Examiner**                      **Aileen Baker Felton**

**Customer No.:** 022913

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### REPLY BRIEF

**Mail Stop Appeal Briefs - Patent**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, VA 22313-1450**

Dear Sir:

**This Reply Brief is being filed under the provisions of 35 U.S.C. § 134(a) and 37 C.F.R.**

§ 41.41 in response to the Examiner's Answer which was mailed September 15, 2005.

### ARGUMENT

**I. THE EXAMINER'S ANSWER, LIKE PREVIOUS OFFICE ACTIONS, FAILS TO SHOW THAT THE APPLIED ART TEACHES OR SUGGESTS EVERY CLAIM LIMITATION (E.G., A COMPOSITION THAT INCLUDES "SLAG TRAP PARTICLES" MADE BY A "GAS PHASE REACTION" AND/OR THAT ARE "HIGHLY DISPERSED")**

The Examiner's Answer is consistent with previous rejections and falls into the same trap of constructing and then attacking broad, hypothetical generic claims that exist only in the Examiner's mind, while ignoring important distinguishing limitations found in the actual claims at issue. The limitations at issue involve metal oxide particles that are manufactured by a "gas phase reaction" to form particles that were originally described in German as "hochdispers" (literally translated as "highly dispersed"). Such particles are uniquely suitable for use as a slag trap for capturing fine molten slag formed during combustion of exploding air bag propellants. Examples of "highly dispersed" metal oxide slag trap particles are disclosed in the Application at page 9, lines 11-20, and include Aluminiumoxid C, Titanoxid P25, and VP Zirkonoxid manufactured by Degussa AG, located in Germany.

Capturing fine molten slag before it hardens into fine powder reduces the difficulty that otherwise exists when trying to filter such particles before they exit the housing of the gas generator (*i.e.*, so that it does not potentially enter the passenger compartment during an automobile accident and be inhaled by the accident victims). As stated in the application,

The technical problem underlying the present invention vis-à-vis the prior art is to provide improved propellants for gas generators, in particular for airbags, the burn-up behavior of which can be adjusted as desired and which minimize in particular the formation of toxic gases and of powder (dust-type) components which could exit from the housing of the gas generator and enter the lungs.

Application, page 7, lines 3-9. Hence, the present invention solves an important problem that is neither addressed nor understood in the applied art.

The claimed metal oxide slag trap particles, also referred to as “pyrogenic oxides” are manufactured “by the reaction of the respective metal chloride with  $H_2$  and  $O_2$  in the corresponding molar ratio by gas phase reaction (flame hydrolysis).” *Id.*, page 9, lines 21-23 (emphasis added). The claimed slag trap particles differ structurally from other metal oxides (*e.g.*, made by a “wet process”) having perhaps the same chemical make-up and/or specific surface area because, unlike metal oxides made in a different way, “[t]hese oxides [*i.e.*, made by flame hydrolysis] have no pores and no defined agglomerates as is usually the case in the preparation by a wet process.” *Id.*, page 9, lines 23-25 (emphasis added).

The tremendous advantages of specifically selecting “pyrogenic oxides” manufactured by a “gas phase reaction”, as opposed to, *e.g.*, a “wet process”, are described in detail as follows:

The highly resolved lattices, *i.e.* the large inner surface of for example  $Al_2O_3$ ,  $TiO_2$  or  $ZrO_2$  (in highly dispersed form) cause on the one hand cooling of the burn-up products due their inactivity and causes [*sic*] on the other hand take-up of, in particular, liquid and/or solid slag portions and particles, respectively, which are developed during burn-up. Thus, the tablet form of the propelling charges for gas generators remains during and after burn-up and possibly formed fragments and pieces can be easily filtered. That means, almost no dust is formed which could exit from the propelling charges for gas generators and consequently from the housing of the gas generators during burn-up. Thus, the slag traps function as an internal filter in the propelling charges for gas generators themselves and, thus, substantially prevent the formation and exit of dust-type slag portions from the housing of the gas generator. Accordingly, an essential simplification of the filter of the housing of the gas generator is obtained, in that additional (mechanical) fine filters in the housing of the gas generator are in part not necessary. This also leads to an advantageous saving of weight of the airbag gas generator.

Simultaneously, the formation of dust-type particles which could exit the gas generator of an airbag and could enter the lungs is minimized by the formation of slags. Dust-type particles which can enter the lungs have a diameter of about  $6\text{ }\mu\text{m}$  or less.

*Id.*, page 10, line 21 – page 11, line 14.

In short, it is abundantly clear that a substantial body of evidence exists in the Application establishing the inventiveness of selecting, from among the universe of metal oxide

particles, those that are manufactured by a “gas phase reaction” to yield particles that are “highly dispersed” instead of particles made by, e.g., a “wet process” (i.e., that are formed by precipitation from an aqueous solution). The claimed slag trap particles are further characterized in the Application as having “highly resolved lattices” and a “large inner surface”. They differ from particles formed by a wet process because they “have no pores and no defined agglomerates as is usually the case in the preparation by a wet process”. *Id.*, page 9, lines 23-25 (emphasis added). Such particles are able to function as a slag trap to capture molten and/or solidified slag particles that might otherwise be emitted into the passenger compartment of the car absent the use of complex and bulky filtration apparatus.

At no point has the Examiner shown where any cited reference teaches or suggests the use of metal oxide particles or fibers to trap molten and/or particulate slag. Instead, the Examiner engages in a hand waving argument that can be summarized as follows: “The cited art discloses metal oxide particles and fibers. You say the claimed slag trap particles are unique. I say they aren’t because you are merely calling them something else. Calling them something else doesn’t change what they are and transform them into something else.” The problem with this argument is that it entirely ignores the important claim language discussed above (i.e., “slag trap particles” formed by a “gas phase reaction” so as to be “hochdispers” (or “highly dispersed” in English). The argument wrongly assumes that all metal oxide particles are the same regardless of how they are manufactured. As clearly described in the Application, the claimed slag trap particles differ in significant ways from metal oxide particles formed in another way (e.g., by a “wet process”). Selecting metal oxide particles that are manufactured by a “gas phase reaction” yields the surprising and unexpected result that such particles can act as a “slag trap”, a concept that is neither taught nor even understood in the applied art.

Moreover, the Examiner's Answer fails to provide even one iota of evidence showing that the metal oxide particles described in the applied art are, in fact, formed by a "gas phase reaction". Instead, the Examiner's Answer rests on the unsupported assumption that all metal oxide particles are the same, and that selecting metal oxide particles made by a "gas phase reaction" from among the universe of metal particles is simply "calling them by another name". That is patently false, as clearly shown by the previous quotes taken from the Application. For example, selecting metal oxide particles made by a "gas phase reaction" is not "calling [metal oxide particles formed by a 'wet process'] by another name". Metal oxide particles formed by a "gas phase reaction" are different and have unique properties compared to those made by a "wet process". Thus, selecting the claimed slag trap particles from among the universe of metal oxide particles, including those that would not function well to trap slag, is "result-effective" and, therefore, inventive.

Completing the deceit, the Examiner's Answer attempts to brush aside the fact that the Examiner has utterly failed to show where the cited art teaches the use of slag trap particles made by a "gas phase reaction" thusly:

Applicant's arguments regarding the gas phase reaction are similarly unpersuasive. This language is product by process language and refers to the formation of the oxide with high surface area. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.

Examiner's Answer, page 7, lines 12-16. While it may be true that a substance or compound formed by two or more different processes *can* be the same, and therefore not patentably distinct, the Examiner provides no evidence that the metal oxide particles in the cited art *are* in fact identical to the claimed slag trap particles. On the other hand, the present Application provides abundant evidence that the selection of slag trap particles formed by a "gas phase reaction"



instead of metal oxide particles formed by, e.g., a "wet process" is both unique and inventive based on the resulting ability of such particles to trap slag in a superior manner and eliminate bulky filtration apparatus. At best, the applied art merely discloses a genus of metal oxide particles, with no teaching or suggestion to select from the genus those particles that are made by a "gas phase reaction" rather than those made by a "wet process". Absent such teaching, one of skill in the art would not have been motivated to make the claimed selection.

**II. THE EXAMINER'S ANSWER FAILS TO PROVIDE ANY EVIDENCE OR TECHNICAL REASONING SHOWING THAT THE CLAIMED SLAG TRAP PARTICLES ARE INHERENTLY TAUGHT IN THE APPLIED ART**

The Examiner's Answer, as well as previous Office Actions, apparently relies on the doctrine of inherency to supply the missing features of the claims not taught or suggested in the applied art. According to MPEP § 2112, an assertion that a claimed property not taught in the art is nevertheless inherent requires the Examiner to either provide a "basis in fact" (i.e., evidence) or "technical reasoning" in the absence of evidence to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the prior art" (emphasis in MPEP):

To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient."

MPEP § 2112 (citing and quoting *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)).

Notwithstanding the foregoing requirements, the Examiner has admittedly provided no evidence showing that the claimed slag trap particles formed by a "gas phase reaction" are inherently found in the applied art, as indicated at page 2 of the Examiner's Answer: "No

evidence is relied upon by the Examiner in the rejection of the claims under appeal". Nor does the Examiner's Answer provide "technical reasoning" showing that the claimed slag trap particles are "necessarily" found in the applied art, rather than simply being in the realm of "probabilities or possibilities". MPEP § 2112. Instead, the Examiner's Answer simply assumes, with no evidentiary or technical basis, that the claimed slag trap particles are the same as those taught in the applied art. Indeed, the Examiner engages in the mockery of Appellants, as if they are simply making the whole thing up, by disingenuously saying that Appellants are simply "calling them [*i.e.*, the claimed slag trap particles] by another name". That is clearly not true and the Examiner knows it.

Appellants have made it abundantly clear to the Examiner, by liberally quoting the text of the Application in written arguments and in person during an Examiner Interview, that the claimed metal oxide particles formed by a "gas phase reaction" are quite different from metal oxide particles formed other ways (*e.g.*, by a "wet process"). Even in the face of all the evidence that the claimed slag trap particles are not inherently shown in the applied art, the Examiner's Answer fails to comply with the requirements set forth by the Board by utterly failing to provide any "basis in fact and/or technical reasoning" that "the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." MPEP § 2112 (quoting from *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App & Inter. 1990)).

Moreover, because the Examiner relies on inherency in the context of an obviousness rejection under 35 U.S.C. § 103(a), rather in the case of anticipation under 35 U.S.C. § 102, the requirements for showing inherency are even stricter. According to the MPEP:

Obviousness cannot be predicated on what is not known at the time an invention is made, even if the inherency of a certain feature is later established. *In re Rijckaert*, 9 F.2d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993).

MPEP § 2141.02. The MPEP further teaches that if the prior art does not recognize a claimed feature as being a “result-effect variable”, that feature is unobvious as a matter of law. MPEP § 2141.02 (citing *In re Antonie*, 559 F.2d 618, 620, 195 USPQ 6, 8 (CCPA 1977)). Thus, unless it was actually known in the art at the time of the present invention that selecting metal oxide particles formed by a “gas phase reaction” inherently yields particles that are better suited to act as slag trap particles, the claimed selection of such particles is unobvious as a matter of law (*i.e.*, because it is a “result-effective variable” not previously known in the art).

In the present case, the Examiner has utterly failed to show that selecting metal oxide particles formed by a “gas phase reaction” was a known “result-effective variable” and that selecting them from among the universe of metal oxide particles would inherently act as a superior slag trap.

### **III. THE DOCTRINE OF INHERENCY FURTHER SUPPORTS APPELLANTS' CONTENTION THAT THE CLAIMED COMPOSITIONS ARE UNOBVIOUS OVER THE APPLIED ART**

Not only has the Examiner failed to meet the required burden of showing the claimed invention was inherently found in the applied art, the doctrine of inherency actually cuts in favor of Appellants. According to MPEP § 2141.02, the “disclosed inherent properties” in an application “are part of ‘as a whole’ inquiry”:

In determining whether the invention as a whole would have been obvious under 35 U.S.C. 103, we must first delineate the invention as a whole. In delineating the invention as a whole, we look not only to the subject matter which is literally recited in the claim in question... but also to those properties of the subject matter which are inherent in the subject matter *and* are disclosed in the specification.... Just as we look to a chemical and its properties when we examine the obviousness of a composition of matter claim, it is this invention *as a whole*, and not some part of it, which must be obvious under 35 U.S.C. 103.

MPEP § 2141.02 (citing *In re Antonie*, 559 F.2d at 620, 195 USPQ at 8). Moreover, “[f]rom the standpoint of patent law, a compound and all its properties are inseparable.” MPEP § 2141.02 (citing *In re Papesch*, 315 F.2d 381, 391, 137 USPQ 43, 51 (CCPA 1963)). Thus, all of the results, advantages and improvements that flow from selecting metal oxide particles made by a “gas phase reaction” rather than some other way, *e.g.*, by a “wet process”, must be considered when determining whether the claims are obvious. Such advantages are discussed above and include, *inter alia*, the improved ability to trap molten and particulate slag so as to obviate the need for heavy filtration devices.

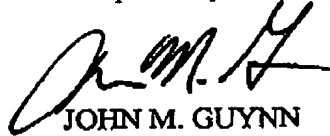
Notwithstanding the doctrine that “a compound and all its properties are inseparable” and that they form part of the “claimed invention as a whole inquiry”, the Examiner has never addressed *any* of the advantages and improvements disclosed in the application, which are inherent properties and advantages of the claimed invention. According to MPEP § 2141.02, the Examiner’s Answer and every previous office action are thus further deficient for this additional reason.

In conclusion, Appellants submit that the claims as presented on appeal are unobvious over the applied art. Moreover, Appellants submit that the Examiner’s Answer fails to state a *prima facie* obviousness rejection because it fails to show where every limitation is taught in the applied art. Appellants further submit that the Examiner’s Answer fails to provide any basis in fact or adequate technical reasoning showing that any claimed features not disclosed in the applied art are nevertheless inherently found in the art. Finally, Appellants submit that the

inherent features of the claimed invention discussed in the Application form part of the "claimed invention as a whole inquiry" but were never addressed by the Examiner.

Dated this 21<sup>st</sup> day of October 2005.

Respectfully submitted,



JOHN M. GYNN  
Registration No. 36,153  
Attorney for Applicant  
Customer No. 022913

JMG:sp

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